In the Claims:

1.   (currently amended) A system for monitoring the effect of extracellular chemical stimuli on the translational motion of cells, the system comprising:

(a)   an array of one or more cell containment ~~volumes~~ wells;

(b)   an array of one or more chemical attractant wells ~~agent volumes~~ interspersed among the array of one or more cell containment ~~volumes~~ wells;

(c)   one or more substantially planar sensing electrodes distributed within the arrays of cell containment wells ~~volumes~~ and chemical attractant wells ~~agent volumes~~ so that at least one of the sensing electrodes is between one cell containment well ~~volume~~ and one chemical attractant well ~~agent volume~~, wherein the one or more sensing electrodes is operatively coupled to a sensing device capable of measuring an electrical parameter of the sensing electrode;

(d)   at least one counter electrode in electrical connection with the one or more sensing electrodes; and

(e)   a biocompatible chemical gradient stabilizing gel medium in simultaneous diffusional contact with the arrays of cell containment wells ~~volumes~~ and chemical wells ~~volumes agent volumes~~.

2.   (original) The system of claim 1 further comprising a reference electrode in electrical connection to the at least one counter electrode and the one or more sensing electrodes.

3.   (original) The system of claim 1, wherein the measured electrical parameter of the sensing electrode is impedance.

4.   (currently amended) The system of claim 1, wherein the chemical gradient stabilizing gel medium is in a planar geometry overlying the arrays of cell containment wells ~~volumes~~ and chemical attractant wells ~~agent volumes~~.

5.   (original) The system of claim 1, wherein the surface area of each of the one or more sensing electrodes is from about 0.5×10^{-2} mm^2 to about 10×10^{-2} mm^2.

6.   (original) The system of claim 1, wherein the sensing device is operatively coupled to a microprocessor.

7.   (original) The system of claim 6, wherein the microprocessor is under the control of a software program executable on the microprocessor.